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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/719,303	12/11/2000	Martin Schadt	08130.0058	7024

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EXAMINER

HON, SOW FUN

ART UNIT	PAPER NUMBER
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1772

DATE MAILED: 01/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/719,303

Examiner

Sow-Fun Hon

Applicant(s)

SCHADT ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 26-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Lack of Unity Requirement

1. Claims 26-29 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected group, there being no special technical feature which unites the two groups of claims, the special technical feature being one which defines a contribution over the prior art. Upon allowance of claims 1-25, claims 26-29 will be rejoined to the first group of claims as long as the special technical feature in the first group of claims is found present in the second group of claims.

2. Applicant timely traversed the restriction (election) requirement in Paper No. 5. The traversal is on the ground(s) that the International Preliminary Examination Report did not find a lack of unity of invention. This is not found persuasive because the Report found that claims 1 and 26 lack an inventive step over US 5,602,661. The officer who prepared the report did not require a lack of unity election even though he found a lack of unity of invention, there being no special technical feature which unites the two groups of claims.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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- a. In claim 1,
 - i. It is unclear what the term “polymerisable mixture” means. Does it mean that all of the components are polymerisable, or just some? In addition, does “mixture” mean that the two components are blended together?
 - ii. It is unclear what the difference is between the terms “monomer” and “prepolymer”;
 - iii. It is unclear whether the liquid crystal monomer is a different compound from the photo-orientable monomer. In addition, it is unclear whether the repeat unit of the oligomer or polymer are different from the liquid crystal monomer.
 - iv. It is unclear what is meant by the term “photo-orientable”.
- b. In claims 2-11, there is insufficient antecedent basis for the term “substance” in the parent claim 1.
- c. In claims 2-4, it is unclear whether the term “parts” means parts by weight.
- d. In claim 6, it is unclear whether the phrase “substance comprises azo dyes” means that the substance contains a compound belonging to the group of azo dyes.
- e. In claim 17, it is unclear what is meant by “presensitised film precursor”.
- f. In claim 22, it is unclear whether the description of “locally varying preferred orientation directions” is that of local domains of preferred orientation directions which vary depending on the domain.
- g. In claim 25, it is unclear whether the layer has a combined function of orientation layer and another function from the group consisting of a retarder, an optical filter, a polarizer, and a polarized light emitter.

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- h. In claims 17-18, it is unclear whether the layer of mixture is in contact with the substrate.

Claim Rejections - 35 USC § 102

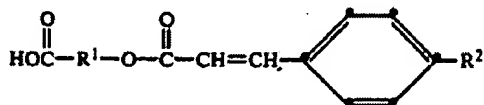
5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-5, 7, 11-13, 15-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Noonan et al. (US 4,696,990).

Noonan et al. teaches a polymerizable mixture of liquid crystal (LC) monomer (p-hydroxybenzoic acid, 4'-hydroxy-1-biphenylcarboxylic acid, 6-hydroxynaphthoic acid and 4-hydroxy-4'-stilbenecarboxylic acid) reacted with an acrylate monomer, and a photo-orientable monomer (cinnamoyl component such as 4-Methoxycinnamoyl chloride) (column 5, lines 1-68). The monomer containing cinnamoyl component has a vinyl group (column 4, lines 25-35) which undergoes cis-trans isomerism as seen below.



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Noonan et al. teaches that the mixture is dissolved in a solvent (column 6, lines 1-10). Coumarin sensitizer is a fluorescent dye which is added to the polymerized mixture (column 13, lines 1-15). Noonan et al. teaches a presensitized film precursor comprising a conductive substrate carrying a layer of the mixture (photosensitized photocrosslinkable composition coated upon a metal plate) (column 1, lines 20-40).

7. Claims 1-4, 7-14, 17-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Schadt et al. (US 5,602,661).

Schadt et al. teaches a polymerizable mixture of cross-linkable liquid crystal monomer which has acrylate or diacrylate components with a photo-orientable polymer PPN to form a hybrid layer which is optically anisotropic (column 3, lines 15-65). Dichroic dyes are added for making an optical dichroic filter, polarizer or polarized light emitter (beam splitter). Chiral molecules are added to make an optical cholesteric (LC phase) filter or retarder (column 5, lines 5-25). Schadt et al. teaches the use of liquid crystals with nematic phase (twisted nematic effect) and with ferroelectric phase (ferroelectric effect). A conductive substrate (electrode layer) carries a layer of the mixture (column 7, lines 45-68). The film of crosslinked liquid crystal monomers has varying local orientation of the liquid crystal monomers (column 10, lines 15-20). Since the film has orientation, it has the function of an orientation layer.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 6 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schadt et al. in view of Akashi et al. (US 5,589,237).

Schadt et al. has been discussed above and teaches a polymerizable mixture comprising liquid crystal and a photo-orientable polymer. In addition, Schadt et al. teaches its use in a liquid crystal display device (column 1, lines 30-45). Schadt et al. fails to teach the azo dyes as part of the dichroic dyes, and fluorescent molecules.

Akashi et al. teaches a liquid crystal display device wherein the liquid crystal layer contains dichroic dyes comprising of azo dyes to improve display contrast, and fluorescent molecules (dyes) to improve light scattering properties (column 5, lines 45-65).

Because Akashi et al. teaches that the azo dyes improve display contrast, and the fluorescent dyes improve light scattering properties, it would have been obvious to one of ordinary skill in the art to have used a fluorescent molecule, and the azo dye of Akashi et al. as the dichroic dye, in the invention of Schadt et al. in order to obtain a liquid crystal display with improved display contrast and the desired optical properties.

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number is (703)308-3265. The examiner can normally be reached Monday to Friday from 9:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on (703)308-4251. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9310.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

S7

Sow-Fun Hon

01/10/03


HAROLD PYON
SUPERVISORY PATENT EXAMINER
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1/13/03